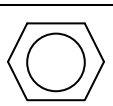
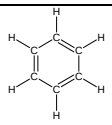
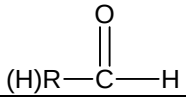
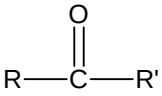
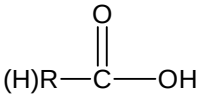
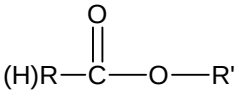
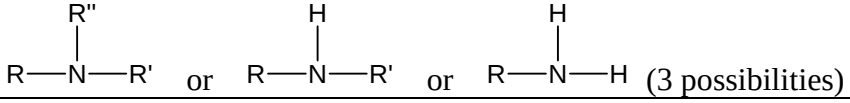
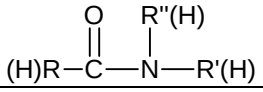
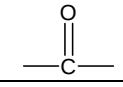
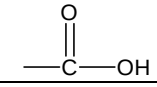
24.1 (and heating food substances lab)

What evidence do we have that carbon is present in most foods?	When most foods are heated they turn black. This indicates the presence of carbon.
Why is the term "organic" chemistry misleading?	It suggests that all organic compounds come from living things. Organic compounds may be synthetic or may arise without life.
Which compounds are inorganic and which are organic?	Inorganic: the oxides of carbon (CO, CO_2), the bicarbonates (containing the HCO_3^- ion, such as $NaHCO_3$), and carbonates of metal ions (compounds containing the CO_3^{2-} ion, such as Na_2CO_3). All other carbon-containing compounds are organic.
Give examples of organic compounds.	Plastics, synthetic and natural fibers (like cotton and wood), most drugs, perfumes, petroleum products, carbohydrates, fats and oils, proteins, vitamins, hair, cell membranes and cell components, etc.
Define functional group.	The name for the part of an organic molecule where most chemical reactions occur.
Draw the characteristic structural feature of these functional groups:	
Alkanes	C–C
Alkenes	C=C
Alkynes	C≡C
Aromatics	 or  or  (all the same)
Alcohols	R–OH
Aldehydes	
Ketones	
Carboxylic acids	 Also symbolized as COOH
Esters	 Also symbolized as COOC
Ethers	R–O–R'
Amines	 (3 possibilities)
Amides	
Why are compounds classified according to functional groups?	Because compounds with similar functional groups undergo similar reactions (we only have to know a few general reactions).
How does the presence of functional groups influence the boiling point and the solubility of molecules?	The more polar the group, the higher the boiling point and the greater the solubility in water. For example CH_3–O–CH_3 has a lower boiling point and lower solubility in water than CH_3CH_2–OH (the electro-negativity difference between C and O is 1.0 versus 1.4 for H and O).
Draw a hydroxyl group	–OH
Draw a carbonyl group	
Draw a carboxyl group	

You should know the rules for naming hydrocarbons (see handout)